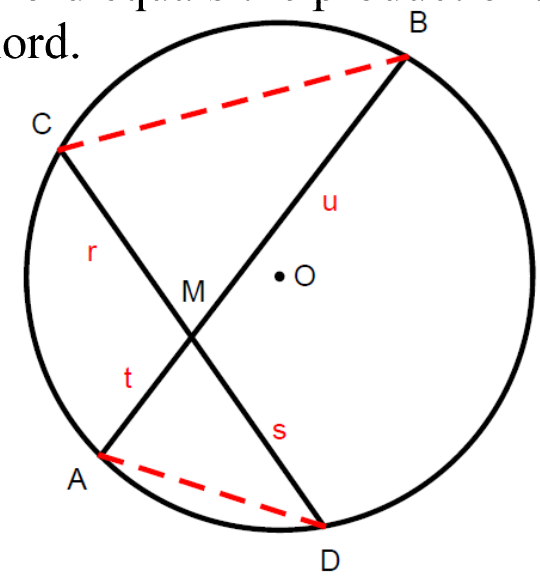
TWO CHORDS

When two chords intersect inside a circle, the product of the segments of one chord equals the product of the segments of the other chord.

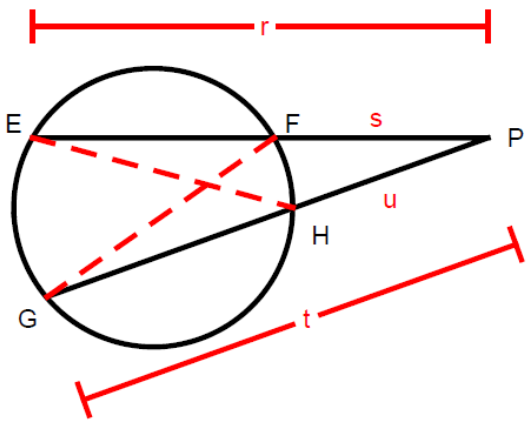
rs=tu

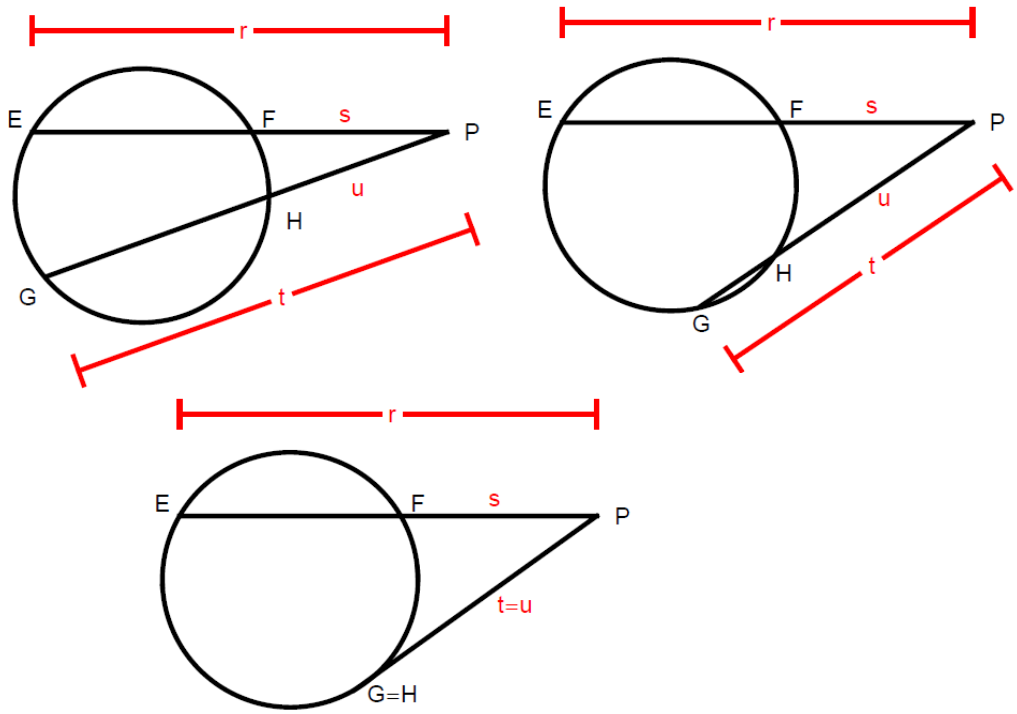


TWO SECANTS

When two secant segments are drawn to a circle from an external point, the product of one secant segment and its external segment equals the product of the other secant segment and its external segment.

rs=tu

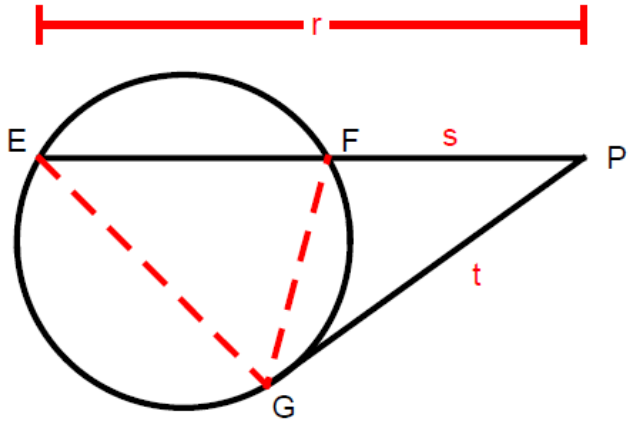


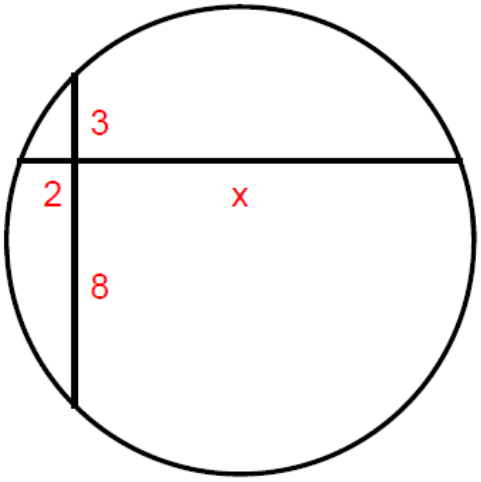


SECANT AND TANGENT

When a secant segment and a tangent segment are drawn to a circle from an external point, the product of the secant segment and its external segment is equal to the square of the tangent segment.

$rs=t^2$

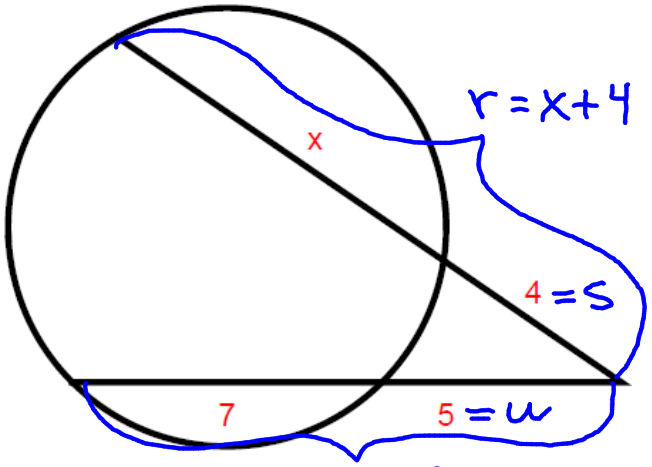




$r = 3$
$s = 8$
$t = 2$
$u = x$

$3 \cdot 8 = 2 \cdot x$
$\frac{24}{2} = \frac{2x}{2}$
$12 = x$

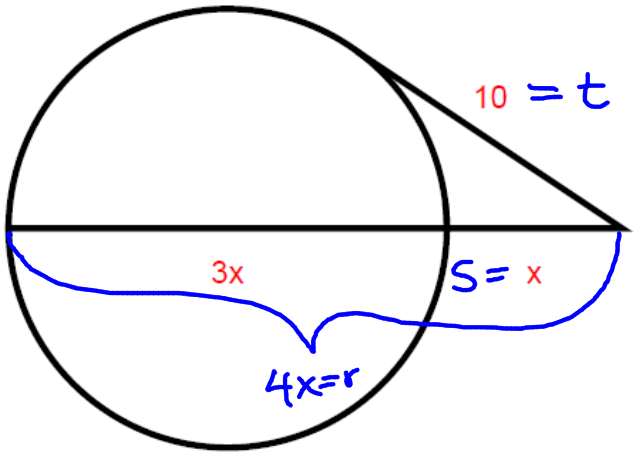
two chords



$r = x + 4$
$4 = s$
$5 = w$
$t = 12$

$(x+4)(4) = 12 \cdot 5$
$4x + 16 = 60$
$-16 \quad -16$
$\frac{4x}{4} = \frac{44}{4}$
$x = 11$

two secants



secant & tangent

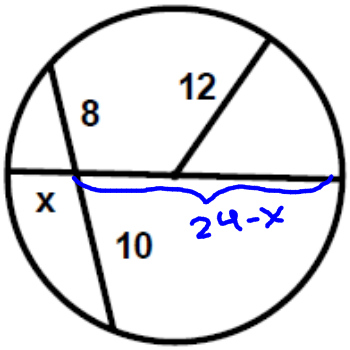
$rs = t^2$

$(4x)(x) = 10^2$

$\frac{4x^2}{4} = \frac{100}{4}$

$\sqrt{x^2} = \sqrt{25}$

$x = 5$



r = 8

s = 10

t = x

u = 24 - x

$8 \cdot 10 = (x)(24-x)$

$80 = 24x - x^2$

$+x^2 \quad +x^2$

$x^2 + 80 = 24x$

$-24x \quad -24x$

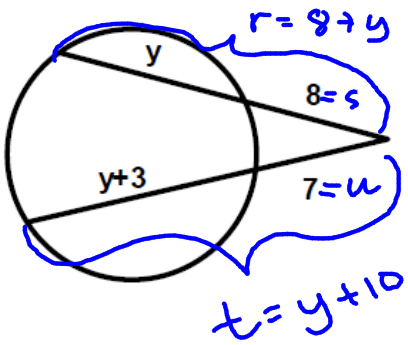
$x^2 - 24x + 80 = 0$

$x = \frac{24 \pm \sqrt{24^2 - 4(1)(80)}}{2(1)}$

$= \frac{24 \pm \sqrt{576 - 320}}{2}$

$= \frac{24 \pm \sqrt{256}}{2} = \frac{24 \pm 16}{2}$

$= 20$ or 4



$(8+y)(8) = (y+10)(7)$

$64 + 8y = 7y + 70$

$-7y \quad -7y$

$64 + y = 70$

$-64 \quad -64$

$\boxed{y = 6}$